



NUCLEAR REGULATORY COMMISSION

[Docket No. 50-331; NRC-2021-0066]

NextEra Energy Duane Arnold, LLC; Duane Arnold Energy Center

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of exemptions that would permit the licensee to reduce its emergency planning (EP) activities at the Duane Arnold Energy Center (DAEC). Specifically, the licensee is seeking exemptions that would eliminate the requirements for the licensee to maintain offsite radiological emergency plans, as well as reduce some of the onsite EP activities based on the reduced risks at DAEC, which is permanently shut down and defueled. However, requirements for certain onsite capabilities to communicate and coordinate with offsite response authorities would be retained. In addition, offsite EP provisions would still exist through State and local government use of a comprehensive emergency management plan process, in accordance with the Federal Emergency Management Agency's (FEMA's) Comprehensive Preparedness Guide (CPG) 101, "Developing and Maintaining Emergency Operations Plans." The NRC staff is issuing a final Environmental Assessment (EA) and final Finding of No Significant Impact (FONSI) associated with the proposed exemptions.

DATES: The EA and FONSI referenced in this document are available on **[INSERT DATE OF PUBLICATION IN *FEDERAL REGISTER*]**.

ADDRESSES: Please refer to Docket ID **NRC-2021-0066** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2021-0066**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; e-mail:

Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- **NRC's Agencywide Documents Access and Management System**

(ADAMS): You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document. In addition, for the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the **AVAILABILITY OF DOCUMENTS** section of this document.

- **Attention:** The PDR, where you may examine and order copies of public documents, is currently closed. You may submit your request to the PDR via e-mail at pdr.resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8:00 a.m. and 4:00 p.m. (EST), Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Marlayna V. Doell, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-3178; e-mail: Marlayna.Doell@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

By letter dated January 18, 2019 (ADAMS Accession No. ML19023A196), NextEra Energy Duane Arnold, LLC (NEDA, the licensee) certified to the NRC that it planned to permanently cease power operations at DAEC in the fourth quarter of 2020. By letter dated March 2, 2020 (ADAMS Accession No. ML20062E489), NEDA updated its timeline and certified to the NRC that it planned to permanently cease power operations at DAEC on October 30, 2020. By letter dated August 27, 2020 (ADAMS Accession No. ML20240A067), NEDA certified to the NRC that power operations

permanently ceased at DAEC on August 10, 2020, and, by letter dated October 12, 2020 (ADAMS Accession No. ML20286A317), that the fuel was permanently removed from the DAEC reactor vessel and placed in the spent fuel pool (SFP) as of October 12, 2020. Accordingly, pursuant to section 50.82(a)(2) of title 10 of the *Code of Federal Regulations* (10 CFR), the DAEC renewed facility operating license no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. The facility is still authorized to possess and store irradiated (i.e., spent) nuclear fuel. Spent fuel is currently stored onsite at the DAEC facility in the SFP and in a dry cask independent spent fuel storage installation.

By letter dated April 2, 2020 (ADAMS Accession No. ML20101M779), as supplemented by letter dated October 7, 2020 (ADAMS Accession No. ML20282A595), NEDA requested exemptions from certain EP requirements in 10 CFR part 50 for DAEC.

The NRC regulations concerning EP do not recognize the reduced risks after a reactor is permanently shut down and defueled. As such, a permanently shutdown and defueled reactor must continue to maintain the same EP requirements as an operating power reactor under the existing regulatory requirements. To establish a level of EP commensurate with the reduced risks of a permanently shutdown and defueled reactor, the licensee requires exemptions from certain EP regulatory requirements before it can change its emergency plans.

The NRC is considering issuing to the licensee exemptions from portions of 10 CFR 50.47, "Emergency plans," and appendix E to 10 CFR part 50, "Emergency Planning and Preparedness for Production and Utilization Facilities," which would eliminate the requirements for the licensee to maintain offsite radiological emergency plans in accordance with 44 CFR, "Emergency Management and Assistance," part 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness," and reduce some of the onsite EP activities based on the reduced risks 10 months after DAEC has permanently ceased power operations.

Consistent with 10 CFR 51.21, the NRC has determined that an EA is the appropriate form of environmental review for the requested action. Based on the results of the EA, which is provided in Section II of this document, the NRC has determined not to prepare an environmental impact statement for the proposed action and is issuing a FONSI.

II. Environmental Assessment

Description of the Proposed Action

The proposed action would exempt the licensee from: (1) certain standards as set forth in 10 CFR 50.47(b) regarding onsite and offsite emergency response plans for nuclear power reactors; (2) requirements in 10 CFR 50.47(c)(2) to establish plume exposure and ingestion pathway emergency planning zones (EPZs) for nuclear power reactors; and (3) certain requirements in 10 CFR part 50, appendix E, section IV, "Content of Emergency Plans," which establishes the elements that make up the content of emergency plans. The proposed action of granting these exemptions would eliminate the requirements for the licensee to maintain offsite radiological emergency plans in accordance with 44 CFR part 350 and reduce some of the onsite EP activities at DAEC, based on the reduced risks once the reactor has been permanently shut down for a period of 10 months. However, requirements for certain onsite capabilities to communicate and coordinate with offsite response authorities would be retained to an extent consistent with the approved exemptions.

Additionally, if necessary, offsite protective actions could still be implemented using a comprehensive emergency management plan (CEMP) process. A CEMP in this context, also referred to as an emergency operations plan (EOP), is addressed in FEMA's CPG 101. The CPG 101 is the foundation for State, territorial, tribal, and local EP in the United States under the National Preparedness System. It promotes a common understanding of the fundamentals of risk-informed planning and decision making and assists planners at all levels of government in their efforts to develop and maintain viable, all-hazards, all-threats emergency plans. An EOP is flexible enough for

use in all emergencies. It describes how people and property will be protected; details who is responsible for carrying out specific actions; identifies the personnel, equipment, facilities, supplies, and other resources available; and outlines how all actions will be coordinated. A CEMP is often referred to as a synonym for “all-hazards” planning. The proposed action is in accordance with the licensee’s application dated April 2, 2020, as supplemented by letter dated October 7, 2020.

Need for the Proposed Action

The proposed action is needed for the licensee to revise the DAEC Emergency Plan once the reactor has been permanently shut down for a period of 10 months. The EP requirements currently applicable to DAEC are for an operating power reactor. Since the certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel have been docketed, pursuant to 10 CFR 50.82(a)(2), the DAEC license no longer authorizes use of the facility for power operation or emplacement or retention of fuel into the reactor vessel and, therefore, the occurrence of postulated accidents associated with DAEC reactor operation is no longer credible. However, there are no explicit regulatory provisions distinguishing EP requirements for a power reactor that has been permanently shut down and defueled from those for an operating power reactor.

In its exemption request, the licensee identified three possible radiological accidents at DAEC in its permanently shutdown and defueled condition. These are: (1) a fuel-handling accident; (2) a complete loss of SFP inventory; and (3) an adiabatic heat up of the hottest fuel assembly. The NRC staff evaluated these possible radiological accidents in the Commission Paper (SECY) 21-0006, “Request by NextEra Energy Duane Arnold, LLC for Exemptions from Certain Emergency Planning Requirements for the Duane Arnold Energy Center,” dated January 15, 2021 (ADAMS Package Accession No. ML20218A875).

In SECY-21-0006, the NRC staff verified that the licensee’s analyses and calculations provided reasonable assurance that if the requested exemptions were

granted, then: (1) for a design-basis accident (DBA), an offsite radiological release will not exceed the early phase protective action guides (PAGs) at the site boundary, as detailed in Table 1-1, "Summary Table for PAGs, Guidelines, and Planning Guidance for Radiological Incidents," to the U.S. Environmental Protection Agency's (EPA's), "PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents," EPA-400/R-17/001, dated January 2017; (2) in the highly unlikely event of a beyond DBA resulting in a loss of all SFP cooling, there is sufficient time to initiate appropriate mitigating actions; and (3) in the event a radiological release has or is projected to occur, there would be sufficient time for offsite agencies to take protective actions using a CEMP to protect the health and safety of the public if offsite governmental officials determine that such action is warranted. The Commission approved the NRC staff's recommendation to grant the exemptions based on this evaluation in its Staff Requirements Memorandum to SECY-21-0006, dated February 11, 2021 (ADAMS Accession No. ML21042A030).

Based on these analyses, the licensee states that complete application of the EP rule to DAEC 10 months after its permanent cessation of power operations would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The licensee also states that it would incur undue costs in the application of operating plant EP requirements for the maintenance of an emergency response organization in excess of that actually needed to respond to the diminished scope of credible accidents for DAEC 10 months after its permanent cessation of power operations.

Environmental Impacts of the Proposed Action

The NRC staff has completed its evaluation of the environmental impacts of the proposed action.

The proposed action consists mainly of changes related to the elimination of requirements for the licensee to maintain offsite radiological emergency plans in accordance with 44 CFR part 350 and reduce some of the onsite EP activities at DAEC,

based on the reduced risks once the reactor has been permanently shut down for a period of 10 months. However, requirements for certain onsite capabilities to communicate and coordinate with offsite response authorities will be retained and offsite EP provisions to protect public health and safety will still exist through State and local government use of a CEMP.

With regard to potential nonradiological environmental impacts, the proposed action would have no direct impacts on land use or water resources, including terrestrial and aquatic biota, as it involves no new construction or modification of plant operational systems. There would be no changes to the quality or quantity of nonradiological effluents and no changes to the plants' National Pollutant Discharge Elimination System permits would be needed. In addition, there would be no noticeable effect on socioeconomic conditions in the region, no environment justice impacts, no air quality impacts, and no impacts to historic and cultural resources from the proposed action. Therefore, there are no significant nonradiological environmental impacts associated with the proposed action.

With regard to potential radiological environmental impacts, as previously stated, the proposed action would not increase the probability or consequences of radiological accidents. Additionally, the NRC staff has concluded that the proposed action would have no direct radiological environmental impacts. There would be no change to the types or amounts of radioactive effluents that may be released and, therefore, no change in occupational or public radiation exposure from the proposed action. Moreover, no changes would be made to plant buildings or the site property from the proposed action. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action

As an alternative to the proposed action, the NRC staff considered the denial of the proposed action (i.e., the "no-action" alternative). The denial of the application would

result in no change in current environmental impacts. Therefore, the environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources

There are no unresolved conflicts concerning alternative uses of available resources under the proposed action.

Agencies or Persons Consulted

No additional agencies or persons were consulted regarding the environmental impact of the proposed action. On February 23, 2021, the State of Iowa representative was notified of this EA and FONSI.

III. Finding of No Significant Impact

The licensee has proposed exemptions from: (1) certain standards in 10 CFR 50.47(b) regarding onsite and offsite emergency response plans for nuclear power reactors; (2) the requirements in 10 CFR 50.47(c)(2) to establish plume exposure and ingestion pathway EPZs for nuclear power reactors; and (3) certain requirements in 10 CFR part 50, appendix E, section IV, which establishes the elements that make up the content of emergency plans. The proposed action of granting these exemptions would eliminate the requirements for the licensee to maintain offsite radiological emergency plans in accordance with 44 CFR part 350 and reduce some of the onsite EP activities at DAEC, based on the reduced risks once the reactor has been permanently shut down for a period of 10 months. However, requirements for certain onsite capabilities to communicate and coordinate with offsite response authorities will be retained and offsite EP provisions to protect public health and safety will still exist through State and local government use of a CEMP.

The NRC is considering issuing the exemptions. The proposed action would not significantly affect plant safety, would not have a significant adverse effect on the probability of an accident occurring, and would not have any significant radiological or nonradiological impacts. This FONSI incorporates by reference the EA in Section II of this document. Therefore, the NRC concludes that the proposed action will not have a

significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

The related environmental document is the “Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Duane Arnold Energy Center, Final Report,” NUREG-1437, Supplement 42, dated October 2010 (ADAMS Accession No. ML102790308), which provides the latest environmental review of current operations and description of environmental conditions at DAEC.

IV. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

Document Description	ADAMS Accession No. / Web link
Federal Emergency Management Agency, Developing and Maintaining Emergency Operations Plans, Comprehensive Preparedness Guide (CPG) 101, Version 2.0, November 2010	https://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg_101_comprehensive_preparedness_guide_developing_and_maintaining_emergency_operations_plans_2010.pdf
Curtland, D., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Request for Exemption from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E,” April 2, 2020	ML20101M779
Curtland, D., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Response to Request for Additional Information Relating to Request for Exemption from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E,” October 7, 2020	ML20282A595
Nazar, M., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Certification of Permanent Cessation of Power Operations,” January 18, 2019	ML19023A196
Curtland, D., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Certification of Permanent Cessation of Power Operations,” March 2, 2020	ML20062E489
Curtland, D., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Certification of Permanent Cessation of Power Operations,” August 27, 2020	ML20240A067
Curtland, D., NextEra Energy Duane Arnold, LLC, letter to U.S. Nuclear Regulatory Commission, “Certification of Permanent Removal of Fuel from the Reactor Vessel for	ML20286A317

Document Description	ADAMS Accession No. / Web link
Duane Arnold Energy Center,” October 12, 2020	
U.S. Environmental Protection Agency, PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents, January 2017	https://www.epa.gov/sites/production/files/2017-01/documents/epa_pag_manual_final_revisions_01-11-2017_cover_disclaimer_8.pdf
SECY-21-0006, “Request by NextEra Energy Duane Arnold, LLC for Exemptions from Certain Emergency Planning Requirements for the Duane Arnold Energy Center,” January 15, 2021	ML20218A875 (Package)
Staff Requirements Memorandum to SECY-21-0006, “Request by NextEra Energy Duane Arnold, LLC for Exemptions from Certain Emergency Planning Requirements for the Duane Arnold Energy Center,” February 11, 2021	ML21042A030
NUREG-1437, Supplement 42, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Duane Arnold Energy Center, Final Report,” October 2010	ML102790308

Dated: March 16, 2021.

For the Nuclear Regulatory Commission.

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